Abstract of the Disclosure

CALCIUM-BASED CATALYST SYSTEM

The process and catalyst system of this invention can be utilized to synthesize a highly random styrene-butadiene rubber having a high trans content by solution polymerization. The styrene-butadiene rubber made by the process of this invention can be utilized in tire tread rubbers that exhibit improved wear characteristics. This invention more specifically reveals a catalyst system for use in isothermal polymerizations which consists essentially of (a) an organolithium compound, (b) a calcium alkoxide and (c) a lithium alkoxide. The subject invention further discloses a process for synthesizing a random styrene-butadiene rubber having a low vinyl content by a process which comprises copolymerizing styrene and 1,3-butadiene under isothermal conditions in an organic solvent in the presence of a catalyst system which consists essentially of (a) an organolithium compound, (b) a calcium alkoxide and (c) a lithium alkoxide. An amine can also be added to the catalyst system to increase the molecular weight (Mooney viscosity) of the rubber.